

## Accepted Manuscript

Beam position monitor for superconducting post-linac in RAON

J.W. Kwon, H.J. Woo, G.D. Kim, Y.S. Chung, E.-S. Kim

PII: S0168-9002(18)31004-0

DOI: <https://doi.org/10.1016/j.nima.2018.08.046>

Reference: NIMA 61087

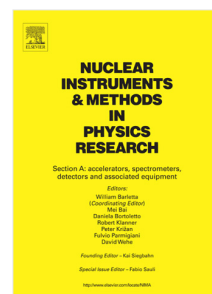
To appear in: *Nuclear Inst. and Methods in Physics Research, A*

Received date: 19 June 2018; Revised date: 15 August 2018;

Accepted date: 15 August 2018

Please cite this article as:, Beam position monitor for superconducting post-linac in RAON, *Nuclear Inst. and Methods in Physics Research, A* (2018), <https://doi.org/10.1016/j.nima.2018.08.046>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



# Beam position monitor for superconducting post-linac in RAON

J.W. Kwon<sup>a,b</sup>, H. J. Woo<sup>a</sup>, G. D. Kim<sup>a</sup>, Y. S. Chung<sup>a</sup>, E.-S. Kim<sup>b,\*</sup>

<sup>a</sup>Rare Isotope Science Project, Institute for Basic Science (IBS), Daejeon 34047, Korea

<sup>b</sup>Department of Accelerator Science, Graduate School, Korea University, Sejong, Korea

---

## Abstract

The Rare-isotope Accelerator complex for ON-line experiments (RAON) is an accelerator for heavy ions, such as uranium and oxygen. To correct the beam trajectory in the post-linac with low- $\beta$ , we developed a beam position monitor. In the post-linac, the beam is accelerated from 0.5 MeV/u to 18.5 MeV/u, and each bunch has an electric charge of less than 10 pC. To achieve higher signal strength and better linearity, we investigated stripline- and button-type beam position monitor (BPM) and designed the BPMs with CST Particle Studio. We have fabricated a button-type BPM. We tested 10 BPMs by using a wire test stand to achieve the characterization of each BPM, including the calibration factor with single-pass H electronics of I-Tech. The developed wire test stand has a stretched wire and is movable in the 2D plane with servomotors. In this paper, we present the results of the design, fabrication, and off-line test of a button-type BPM for a low- $\beta$ , heavy-ion beam.

*Keywords:* linear accelerator, beam diagnostics, beam position monitor

---

## 1. INTRODUCTION

The layout of the rare-isotope accelerator complex for on-line experiments (RAON) is shown as Fig. 1 [1].

---

\*Corresponding author

Email address: eskim1@korea.ac.kr (E.-S. Kim)

Download English Version:

<https://daneshyari.com/en/article/8955836>

Download Persian Version:

<https://daneshyari.com/article/8955836>

[Daneshyari.com](https://daneshyari.com)